

## ABSTRACT

A tetragonal lattice 104 is formed by cylindrical structural members 101, and a photonic crystal 100 has a periodical structure formed by a periodical arrangement of such tetragonal lattice 104. A distance between center points of the cylindrical structural members 101 is taken as a unit length  $a$ , which constitutes a lattice constant of the tetragonal lattice 104. At an approximate center of the tetragonal lattice 104, a cylindrical structural member 102 is provided, and a dielectric area 103 is provided around the cylindrical structural members 101 and the cylindrical structural member 102. This structure allows to form a photonic band gap for a TE wave and a photonic band gap for a TM wave in a certain common frequency region, thereby forming a complete band gap.